REMARKS / ARGUMENTS

Claims 1-12 have been rejected under 35 USC 103(a) as being unpatentable over US Patent 6,608,920 to Su et al. ("Su") in view of Michael, US Pat. 5,640,200 ("Michael").

Su teaches a process for measuring the CD (critical dimension) of a semiconductor mask pattern transferred to a semiconductor wafer, in which a series of dies are sequentially measured by first locating a target area on the die and then vectoring (moving) to a CD measurement area. In the process of Su, the stored image of an alignment target is used for pattern recognition in the process of acquiring each subsequent die's target. The stored image is updated with each new die measured, using an image of the most recently acquired target area. In this manner, the stored target image always closely approximates the next target to be acquired. Thus, according to Su, difficulties in recognizing and centering on the target are minimized, and CD measurements of much higher reliability can be effected (see Abstract).

Note that a single alignment target (or "target area") (or region of alignment interest) is first located using pattern recognition, and then using the found location, a single area of measurement interest is reached by moving or "vectoring" to a **single** CD measurement area to perform a measurement of the critical dimension (CD). Su is entirely silent on using a single alignment target for "vectoring" to multiple CD measurement areas. For example, Su teaches away

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from multiple CD measurement areas by repeatedly referring to moving to a single measurement site, such as shown in Fig. 5, steps 560 and 580. Also see col. 2, lines 30-32, lines 57-59, for example.

Su makes an explicit reference to finding an alignment target for each die of a semiconductor wafer, and "vectoring" from each found alignment target to a location for making a CD measurement with a scanning electron microscope. For example, "During exposure, an image of the alignment target is transferred onto each of the dies." col. 2, lines 7-9. This alignment target is the single region of alignment interest which is used to find a single region of inspection interest, i.e., the site at which a CD measurement is made.

Su again states that the basic sequence of "find the alignment target, "vector" to the measurement site on the die, make the CD measurement" is repeated for each die of the wafer, each die having an alignment target, each alignment target having a CD measurement to perform after "vectoring" to the site of the CD measurement to be made with the scanning electron microscope (SEM), col. 2, lines 30-39.

By contrast, Applicant claims a PLURALITY of inspection regions that are associated with each region of alignment interest, such as a region having an alignment target.

Thus, Su does not teach the second element of claims 1 and 7, i.e., "associating the single region of alignment interest with a plurality of regions of inspection interest within the object image".

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Further, because Su does not teach a "plurality of inspection regions", Su does not teach the third element of claims 1 and 7.

The Examiner asserts that "Su further discloses training of the <u>alignment region</u> from die to die", but the fourth element of claim 1 requires "training, for <u>each of the plurality of regions of inspection interest</u>, at least one respective inspection tool". Thus, one <u>inspection</u> tool is trained for each region of <u>inspection interest</u>. But the Examiner only states that Su teaches training of an <u>alignment region</u>, not an <u>inspection tool</u>, as required by the fourth element of claim 1. In fact, Su does **NOT** teach training of an inspection tool for each region of a plurality of inspection regions, as required by claim 1.

The Examiner then asserts that Michael discloses a method of training <u>multiple</u> inspection **regions** for at least <u>one</u> inspection **tool**, citing col. 1, lines 52-60, and col. 14, lines 43-46, and the Abstract of Michael. However, this is <u>irrelevant</u> to claim 1, fourth element, since this element calls for "training, for each of the plurality of regions of inspection interest, at least one respective inspection tool", i.e., training <u>at least one inspection **tool** for each inspection **region**</u> of the plurality of inspection regions that are associated with the region of alignment interest. Thus, combining Michael with Su would not remedy the deficiency of Su, and in fact would not result in Applicant's invention. Accordingly, the rejection of claims 1 and 7 is deemed to be overcome.

Regarding claim 2, since combining Su and Michael does not result in the invention of claim 1, the teaching of statistical training to obtain a Golden template as in col. 14, lines 43-46 does not repair the deficiency of combining Su and Michael. Thus, the rejection of claim 2 is deemed to be overcome.

Regarding claims 3 and 9, combining Su and Michael does not result in the invention of claim 1. Moreover, the teaching in col. 14, lines 43-46 does not relate to "training for each of the plurality of regions of inspection interest is performed in any order among regions of inspection interest", and even if it was relevant, does not repair the deficiency when combining Su and Michael. Thus, the rejection of claims 3 and 9 is deemed to be overcome.

Claims 13-15 have been rejected under 35 USC 103(a) as being unpatentable over Su and Michael as applied to claims 1-3 and 7-9, and further in view of US Patent 5,796,868 to Dutta-Choudhury ("DC").

DC merely provides the elements of a machine vision system having elements that carry out the methods training and performing inspection of claims 1 and 7. Since the combination of Su and Michael does not provide the inventions of claims 1 and 7, adding the elements of a machine vision system would necessarily fail to provide the invention of claim 13 and dependent claims 14 and 15, because claim 13 requires the same aspects as claims 1 and 7, i.e., "associate the region of alignment interest with a plurality of regions of inspection

interest within the acquired image-data, and associate each of the plurality of

regions of inspection interest with at least one inspection tool".

Regarding the rejections of claims 15, 18, and 19, refer to the response

regarding claims 1, 2, and 13 above.

Regarding claims 20-22, since these claims depend from claim 19,

deemed allowable, these claims are also deemed allowable, since Michael does

not combine with Su to provide Applicant's invention, even further in view of DC.

The rejection of claims 20-22 is deemed to be overcome.

Regarding claim 23, Michael does not teach a blank scene inspection tool.

Nevertheless, claim 23 depends on claim 13, which is not taught by any

combination of the above-cited prior art. Accordingly, the rejection of claim 23 is

deemed to be overcome.

The prior art made of record and not relied upon does not appear to present an impediment to the allowance of the present application.

Accordingly, Applicants assert that the present application is in condition for allowance, and such action is respectfully requested. The Examiner is invited to phone the undersigned attorney to further the prosecution of the present application.

Respectfully Submitted,

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